

### **REMARKS**

This Response is to the Office Action mailed on July 30, 2004. Applicant respectfully submits that the claims are already patentable without amendment so no amendments to the claims have been made. Reconsideration of the claims and the rejections is respectfully solicited.

#### **Request for Clarification**

Applicant respectfully submits that the Office Action Summary Page of the Final Office Action mailed July 30, 2004, and the detailed comments which follow on pages 2-6 are not completely in agreement. In the Office Action Summary Page, claims 1-29 were rejected, while the detailed comments section describes claims “1-XXX” as rejected under 35 U.S.C. § 102(b). Further, the detailed comments list reasons for the rejection of claims 1-22 and 24-29, but the status of claim 23 is undetermined.

Since Applicant cannot determine if claim 23 is rejected, and there are no reasons for the rejection of claim 23, Applicant cannot determine its status. Applicant will offer comments in support of patentability of claim 23, however, Applicant respectfully requests a later opportunity to argue claim 23 if the Examiner’s intent was to reject claim 23 but failed to list a basis for the rejection. Applicant respectfully submits that it is fundamentally unfair to reject a claim without any support of prior art.

#### **§102 Rejection of the Claims**

Claims 1-22 and 24-29 were rejected under 35 U.S.C. § 102(e) as being anticipated by Jasper et al. (U.S. 6,201,955 B1). Applicant does not admit that the Jasper et al. patent is prior art to the present patent application and reserves the right to swear behind the Jasper et al. patent at a later date. At this time, Applicant chooses to distinguish the Jasper et al. patent. Applicant respectfully submits that this rejection under 35 U.S.C. § 102(e) is not proper since all the elements of claims 1-22 and 24-29 are not found in the single reference to Jasper et al. In summary, but not by way of limitation, the Jasper et al. patent analyzes the RF signals to provide

weighting, while the present claims have limitations in which the apparatus operates on the baseband signals (after demodulation) to determine weighting.

The Jasper et al. patent describes the weighting of one of the two RF inputs to optimize some qualities of the received RF signal. All analysis is performed in either the RF domain or an IF domain. As stated in the Jasper et al. patent in column 5, lines 7-12,

The present invention looks at raw signal power **prior to demodulation**, which means that it can be part of an antenna structure as opposed to part of the receiver and also makes it applicable to an analog environment. Plus, the invention effectively detects and handles noise-dominated scenarios and in-band noise spurs. [Emphasis Added]

In the Final Office Action mailed July 30, 2004, the comparison of the Jasper et al. patent to claims 1, 10 and 15 stated on pages 2-3:

As per claims 1, 10 and 15 Jasper discloses a method for reducing interference in a communication device comprising: providing a communication device having first and second antenna elements (see figs. 3, 6 elements 302, 304, 601) and a radio frequency combiner (see figs. 3, 6 elements 312, 603 and col.5, lines 28-33 and col.7, lines 39-40) to combine outputs of said first and second antenna elements, said first antenna element having an adjustable weight (see figs.3, 6 elements 306, 602 and col.5, lines 35-36 and col.7, lines 37-38); said communication device further having a single radio frequency receiver path to receive the combined outputs an[d] **produce a base band communication (see figs. 3, 6 elements 310, 604 and col.5, lines 34-35 and col.7, line 41)**; a spectrum analyzer to determining power calculation of adjacent channels and estimating spectral analysis of the channel is the same as the (channel determining individual channel responses) (see figs.3, 6 elements 314, 605 and col.5, lines 48-65 and col.8, lines 13-45) for said first and second antenna elements for each of a plurality of base stations of interest at the base band communication signal; and determining a weight for said first antenna element that optimizes an interference-related quality criterion based on said individual channel responses (see abstract and col.6, lines 58-67 and col.7, lines 45-67 and col.8, lines 4-11) using phased array principles to direct a receive beam. [Emphasis added, errors in the original]

Applicant respectfully submits that the foregoing statements are incorrect. Figures 3 and 6, elements 310 and 605, of the Jasper et al. patent do not support the claim element of a base band communications signal. Figure 3 shows the receiver section operating in the RF domain.

Figure 6 shows a flowchart which describes operation only on the RF signal. Steps 601, 602, 603, 604, 605 and 606 all operate on the RF signals.

Column 5, lines 34-35 of the Jasper et al. patent were also cited as support in the Final Office Action mailed July 30, 2004, but are better understood within the context of the entire paragraph where only RF processing is described. In the Jasper et al. patent, in column 5, lines 13-47 (which includes cited lines 34-35) it states:

The present invention can be more fully understood with reference to FIGS. 3-7. FIG. 3 illustrates a communication device 300 in accordance with a preferred embodiment of the present invention. The communication device 300 includes a first antenna 302, a second antenna 304, a summer 308, a weighter 306 coupled between the second antenna 304 and the second input to the summer 308, and a receiver section 310. The receiver section 310 comprises a RF input port 309 **and a means for analyzing a spectrum of the RF input signal.** In a preferred embodiment, the means for analyzing the spectrum of the RF input signal would comprise a spectrum analyzer 314 for analyzing the spectrum of the received RF signal 312, and a processor 316 for analyzing the output of the spectrum analyzer 314 and for providing a controlling input to the weighter 306. A desired signal and an interfering signal are available for reception at the first antenna 302 and at the second antenna 304. The desired signal and the interfering signal from the first antenna 302 and the weighted version of those signals from the second antenna 304 are combined in the summer 308, and the summer's output is a received RF signal 312. The received RF signal 312 is then fed to the receiver section 310 via the RF input port 309. By adjusting the weight applied in the weighter 306 to the signal coming from the second antenna 304 such that the interfering signal coming from that antenna approaches being 180 degrees out of phase and equal in amplitude to such an interfering signal coming from the first antenna 302 and simultaneously such that the strength of the desired signal is maximized, the interferer can be nearly nulled out in the summer 308 and the signal quality, i.e., SNR, can be maximized. Those skilled in the art appreciate that there are a variety of signal quality metrics. The use of SNR herein is meant to present to the reader an example of a signal quality metric to better illustrate the principles of the present invention. [Emphasis Added]

This operation of analyzing signals to control the weighter is done in the RF domain. In the Jasper et al. patent, in column 7, lines 38-44 (which includes cited line 41) it states:

The first RF signal and the modified second RF signal are then combined to produce the received RF signal (603). The received RF signal is then coupled to a

receiver (604), where the spectrum of **the received RF signal is analyzed** to establish the relationship between desired and undesired components of the received RF signal (605). [Emphasis Added]

The foregoing descriptions cited from the Jasper et al. patent leave little question that the analysis is performed on RF signals.

In contrast to the Jasper et al. patent, the presently claimed invention performs its analysis in the baseband domain. Applicant respectfully submits that the definition of a baseband signal is well known to those skilled in the art to mean the range of frequencies occupied by an information signal before it modulates an RF carrier signal or after it is demodulated from an RF carrier signal. Applicant also respectfully submits that the definition of an RF signal to be a carrier signal with or without the baseband signal modulated within the RF signal. Applicant also submits that the Jasper et al. patent and the present patent application consistently use the same definitions of these terms of art as they are used in the industry.

All the independent claims (claims 1, 10, 15 and 23) currently contain the limitations of operating on or analyzing the baseband signal to control or adjust the weighting.<sup>1</sup> The baseband signal is a demodulated signal recovered by a baseband processor. Applicant respectfully submits that since this limitation is clearly not found in the Jasper et al. patent, then the rejection of claims 1-22 and 24-29 under 35 U.S.C. § 102(e) as being anticipated by Jasper et al. in the Final Office Action mailed July 30, 2004, is improper. Applicant respectfully requests reconsideration of the rejection of claims 1-22 and 24-29, and allowance of claims 1-22 and 24-29.

This aforementioned limitation is also found in claim 23. Applicant respectfully requests allowance of claim 23.

#### **Improper Use of Inherency in Rejecting Claims as Anticipated**

Claims 7, 9, 12, 13, 17-20, 22, 26, 28 and 29 were rejected under 35 U.S.C. § 102(e) as being anticipated by the Jasper et al. patent, even though the Examiner admitted that the Jasper et al. patent does not contain all the elements of claims 7, 9, 12, 13, 17-20, 22, 26, 28 and 29. The

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<sup>1</sup> This claim limitation is not the only distinguishable limitation. This distinguishing feature is used by example, and not by limitation.

missing elements were described as be inherent to the Jasper et al. patent. Applicant respectfully disagrees because the Office Action has not established a *prima facie* case of inherency for claims 7, 9, 12, 13, 17-20, 22, 26, 28 and 29 because, as recited in MPEP § 2112, “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art,” citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). Applicant respectfully submits that there is no reasonably supporting reasoning in these inherency rejections.

The Final Office Action argued that Jasper et al. patent “inherently teaches” interference-related quality criterion which includes a bit error rate (BER) (claim 7), determining a weight including selecting a weight from a predefined set of possible weights (claim 9), estimating a combined channel response including identifying and using a pilot signal received from the first base station of interest (claim 12), applying a predetermined weight including forcing a magnitude associated with the first antenna element to zero (claim 13), calculating individual channel responses including using antenna weight information from a previous time period (claims 17, 18) and calculating individual channel responses including solving  $M$  equations in  $M$  unknowns, where  $M$  is an integer greater than 1 (claim 19), repeatedly applying a predetermined weight, estimating a combined channel response, calculating individual channel responses, determining a new weight, and applying new weight for a subsequent time period (claim 22), that the controller updates the weight of the first antenna element at intervals that depend upon a Doppler rate associated with the communication device (claim 26), that the first unit regularly applies a predetermined weight to the first antenna element for use in determining the individual channel responses (claim 28) and that the first unit determines the individual channel responses for the first and second antenna elements using a combined channel response for the first and second antenna elements for each base station of interest (claim 29). None of these claim limitations can be found in the Jasper et al. patent and the Examiner has pointed to no places within the Jasper et al. patent for support for “these inherencies.”

Further, the Final Office Action argued that Jasper et al. patent “inherently teaches” the limitations of claim 20 of calculating individual channel responses including solving the following system of equations for  $C_1(t=nT)$ :

$$\begin{cases} h_1(t) = \tilde{W}C_1(t) & t \in [nT, nT + \tau] \\ h_1(t) = W_{(n-1)T}C_1(t) & t \in [(n-1)T + \tau, nT) \end{cases}$$

where  $h_1(t)$  is the estimated combined channel response for the first base station of interest at time  $t$ ,  $W_{(n-1)T}$  is the calculated vector gain of the antenna elements during previous period  $[(n-1)T + \tau, nT)$ ,  $C_1(t)$  is the matrix channel response of the first base station of interest for each of the antenna elements at time  $t$ , and  $\tilde{W}$  is the vector gain of the antennas using the predetermined weight. This detailed claim limitation regarding channel estimations in the baseband signals can not be found or even hinted at in the Jasper et al. patent and the Final Office Action has pointed to no places within the Jasper et al. patent for support for these “inherencies.”

From the foregoing, Applicant respectfully submits that the Final Office Action does not provide a basis in fact and/or technical reasoning. Applicant respectfully submits that the alleged inherent claim limitations described above do not necessarily flow from the Jasper et al. patent.

To serve as anticipation when a reference is silent about the asserted inherent characteristic, the gap in the reference may be filled with recourse to extrinsic evidence. But, such evidence must make clear that “the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Continental Can Co. v. Monsanto Co.*, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Applicant respectfully submits that the Examiner has not produced any extrinsic evidence to show that the missing claim elements are necessarily present in the Jasper et al. patent.

Since these “inherent” elements are not explicitly found in the Jasper et al. patent, it is respectfully submitted that the Examiner took Official Notice of the claim limitations listed above as being inherent. Applicant respectfully objects to the taking of Official Notice in the Final Office Action and pursuant to M.P.E.P. § 2144.03, Applicant respectfully traverses the assertion of Official Notice and requests that the Examiner cite references in support of this position. Absent a supporting reference, it appears that the Examiner may be using personal knowledge to provide the missing elements of these claims, so the Examiner is respectfully requested to submit an affidavit as required by 37 C.F.R. § 1.104(d)(2).

RESPONSE UNDER 37 C.F.R. 1.116 – EXPEDITED PROCEDURE

Serial Number: 09/976,200

Filing Date: October 11, 2001

Title: INTERFERENCE REDUCTION USING LOW COMPLEXITY ANTENNA ARRAY

Assignee: Intel Corporation

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Dkt: 884.557US1 (INTEL)

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6904 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 29 day of September, 2004.

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